

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (currently amended) A method for combining a first audio signal from a first audio channel and a second audio signal from a second audio channel, said first and second audio signals having a first and second frequency range, comprising:

shifting the phase of said first audio signal relative to said second audio signal, wherein said shifting is constant and substantially limited to [[a]] said first frequency range from about 20 Hz to about 500 Hz; and

combining the relatively phase-shifted audio signal from said first channel with the audio signal from said second channel to provide a combined bass frequency signal with the range of phase shifting being between about 60 degrees and about 120 degrees,

and electroacoustically transducing the combined bass signal.

2. (original) A method for combining audio signals in accordance with claim 1, wherein said first frequency range is the bass frequency range.

3. (currently amended) A method for combining audio signals in accordance with claim 2[[.]], further comprising downmixing a third channel and a fourth channel to produce a one of said first channel or said second channel.

4. (original) A method for combining audio signals in accordance with claim 3, further comprising the step of downmixing a fifth channel and a sixth channel to produce the other of said first channel or said second channel.

5. (original) A method for combining audio signals in accordance with claim 1, further comprising downmixing a third channel and a fourth channel to produce a one of said first channel or said second channel.

6. (original) A method for combining audio signals in accordance with claim 5, further comprising the step of downmixing a fifth channel and a sixth channel to produce the other of said first channel or said second channel.

7. (original) A method for combining audio signals in accordance with claim 1, wherein said relative shifting involves applying said first audio signal to a circuit including a first all-pass filter, filtering said audio signal from said first audio channel, and applying said second audio signal to a circuit including a second all-pass filter, filtering said second audio signal from said second audio channel, wherein parameters of said first all-pass filter and parameters of said second all-pass filter are selected so that said relative shifting occurs only over said first frequency range.

8. (original) A method for combining audio signals in accordance with claim 1, further comprising adjusting the frequency response of the path carrying the combined audio signals.

9. (currently amended) A method for combining audio signals in accordance with claim 8[.] wherein said adjusting includes equalizing said combined audio signal.

10. (original) A method for combining audio signals in accordance with claim 1, wherein said combining combines only the spectral components in said first frequency range.

11. (currently amended) An audio system comprising:

an audio signal source constructed and arranged to provide a first channel signal and a second channel signal; [[and]]

a phase shifter, coupled to said audio signal source for shifting by a constant phase angle the phase of said first channel signal relative to said second channel signal, wherein said phase shifter is constructed and arranged to substantially limit said phase shifting to said first range of frequencies, only over a first range of frequencies between about 20 Hz to about 500 Hz with the range of phase shifting between 60 degrees to about 120 degrees,

a combiner constructed and arranged to combine the relatively phase-shifted first channel signal and second channel signal to provide a combined bass signal,

and electroacoustical transducing apparatus constructed and arranged to transduce the combined bass signal the phase of said first channel signal relative to said second channel signal, wherein said phase shifter is constructed and arranged to substantially limit said phase shifting to said first range of frequencies.

12. (original) An audio system in accordance with claim 11, is constructed and arranged to maintain the phase of said first channel signal relative to said second channel signal unchanged over a second range of frequencies.

13. (original) An audio system in accordance with claim 12, wherein said first range of frequencies is lower than said second range of frequencies.

14. (currently amended) An audio system, comprising:
a first audio channel input for providing a first audio signal;
a second audio channel input for providing a second audio signal;
phase shifting circuitry, coupled to said first audio channel input and said second audio channel input, for shifting the phase of said first audio signal relative to said second audio signal by a constant phase angle over a first range of frequencies to produce a partially phase shifted audio signal between about 20 Hz to about 500 Hz with the range of phase shifting between about 60 degrees to about 120 degrees,[[;]]and

a combiner, for combining said partially phase shifted first audio signal and said second audio signal to produce a combined bass audio signal,

and electroacoustical transducing apparatus constructed and arranged to transduce the combined bass audio signal into radiated bass acoustic signal.

15. (original) An audio system in accordance with claim 14, said phase shifting circuitry includes a first all-pass filter coupling said first audio channel input and said combiner, said first all pass filter having first filter parameters, and
a second all pass filter coupling said second audio channel input and said combiner,

said second all pass filter having second filter parameters.

16. (original) An audio system in accordance with claim 15, wherein said first filter

parameters and said second filter parameters are predetermined so that said phase shifting circuitry shifts the phase of said first audio signal relative to said second audio signal only over said first range of frequencies.

17. (original) An audio system in accordance with claim 16, wherein said first range of frequencies is limited to the bass frequency band.

18. (currently amended) An audio system in accordance with claim 15, further comprising a third all-pass filter coupling said first all-pass filter and said combiner, said third all-pass filter having third filter parameters and a fourth all-pass filter coupling said [[first]] second all-pass filter and said combiner, said fourth all-pass filter having fourth filter parameters, wherein said first and third all-pass filters have a frequency spacing of approximately 16 and wherein said second and fourth all-pass filters have a spacing of approximately 16.

19. (original) An audio system in accordance with claim 15, further comprising a third all-pass filter coupling said first all pass filter and said combiner, said third all-pass filter having third filter parameters, and a fourth all-pass filter coupling said first all-pass filter and said combiner, said fourth all-pass filter having fourth filter parameters, wherein the combination of said first and third all-pass filters have a frequency spacing factor relative to the combination of said second and fourth all-pass filters of between three and five.

20. (currently amended) An audio system in accordance with claim 14, further comprising a first low-pass filter for filtering said first audio signal and a second low-pass filter for filtering said second audio signal so that said combiner combines only the bass portions of said first audio signal and said second audio signal.

21. (original) An audio system in accordance with claim 14, further comprising a low-pass filter for filtering the output signal of said combiner to provide only the bass portion of said combined signal.

22. (original) An audio system in accordance with claim 14, further comprising a

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downmixing circuit for downmixing signals in a third channel and a fourth channel to form said first audio signal.

a 23. (original) An audio system in accordance with claim 14, wherein said combiner combines said partially phase-shifted first audio signal and said second audio signal only in said first range of frequencies.

24.-28. (cancelled)
